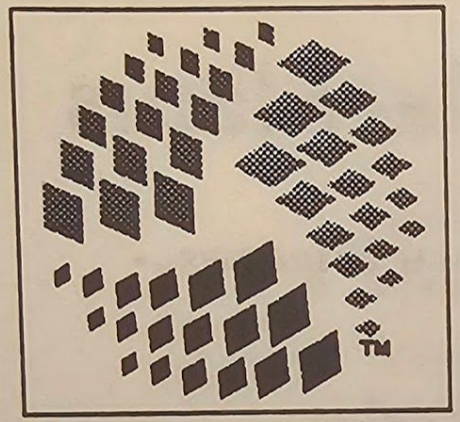
MICROSOFT Modular Windows Presentation

Berkeley



Microsoft Modular Windows™

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Consumer Systems Group

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Overview

- ✔ Modular Windows SDK Overview
- ◆ Modular Windows Opportunities
- ◆ Modular Windows SDK Details
- ◆ Developing Titles
- ◆ Q & A

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Modular Windows™ -- Status

- First product based on Modular Windows™ - Tandy VIS shipping
- Two SDK betas already, updates via Compuserve to support ISVs
- Over 100 applications committed
- Final SDK available December 1992

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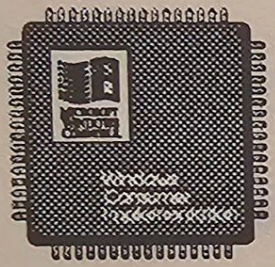
Modular Windows SDK



- $99, available from Microsoft, Dec. 1992
- Tools and Utilities
  - DLLs, drivers, fonts etc.
  - Debugging utilities and tools
  - On-line help, sample code
- Documentation
  - Programmer's Reference
  - Listing of APIs removed, changed, added
  - Authoring Guide
- Visual Basic 2.0 extensions
- Develop CD-ROM applications AND Prototype on-line TV applications

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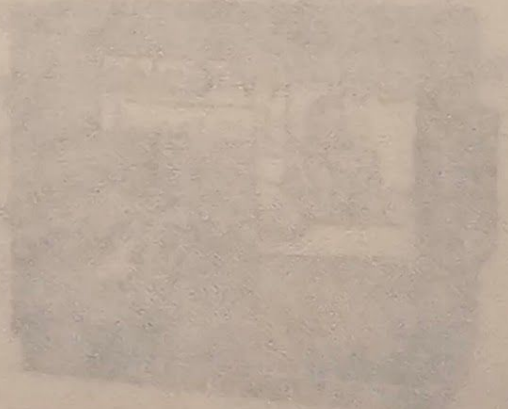
Modular Windows Tools

- Open Tools Strategy
- Development Tools
- Authoring Tools
- Develop on PC playback on Modular Windows device



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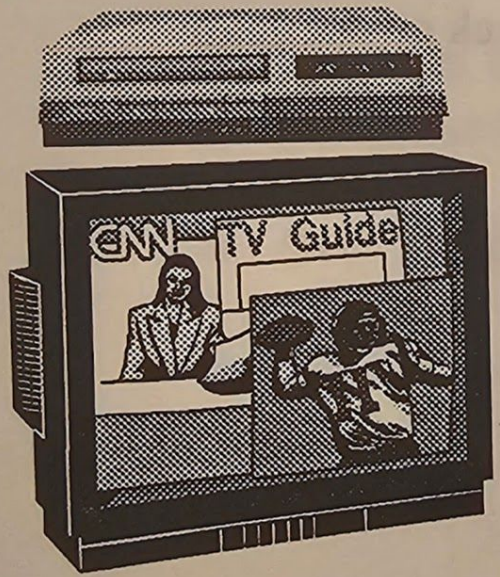
The TV Opportunity

- Digital, Interactive box connected to TV
  - *CD players*
    - CD Multimedia Player
    - CD Movie
  - *Smart Receivers*
  - *Digital Electronics*



Range of uses

- Navigation and Control
- Information Services
- Transactions
- Enhanced Programming
- CD-enhanced Applications

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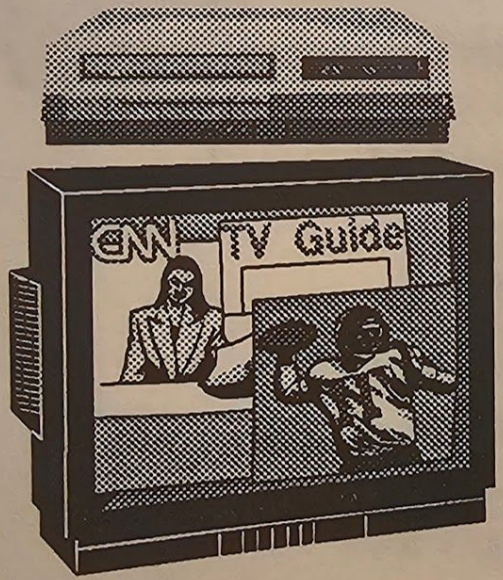
TV-based Devices

- **Ultimate Goal: Industry standard**
  - **Plug & Play**
  - **Vast 3rd party infrastructure (tools, applications, content, add on hardware).**
  - **Standards increase consumer confidence, accelerating market growth**



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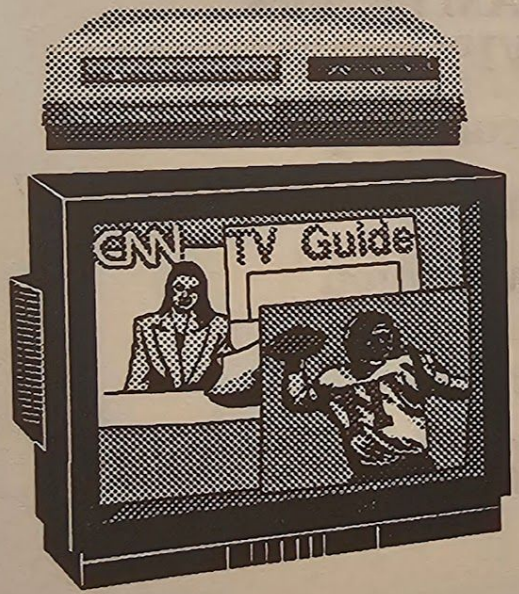
TV-based Devices

- Microsoft's strategy for helping the industry reach this goal
  - Work closely with all industry segments: Cable, Consumer Electronics, Computer, Telecomm, new entrants
  - Leverage tremendous Windows 3rd party infrastructure
  - Provide opportunity for early entry



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Modular Windows™ for VIS

- Small memory footprint
  - 1 MB ROM
  - Additional 1 MB RAM for apps (approx. 740K for VIS)
  - ModWin ROM executes in place
- Support for VIS video modes
  - dual (high or low) resolution driver
  - Single API set
  - Dynamic driver loading

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Modular Windows™ for VIS

- Support for IR hand controller
  - new Focus manager control
- Support for memory cards (Save-It™ cartridge) APIs
- Integrates software motion video (AVI) in ROM
- User Interface
  - New UI Controls and APIs tuned for TV
  - UI fully customizable

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API Structure: MS-DOS

Compact MS-DOS for Modular Windows

- Use standard DOS interrupts and function calls for DOS services
- No FAT file system, use int 21h for redirected file i/o
- No default device drivers, e.g. LPT1, CON, stdin, stdout
- No text support, no command.com

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API Structure : Windows 3.1

- New UI look to standard controls tuned for TV (No Menus, Min/Max Buttons, Sizeable Borders, Non-client scrollbars)
- No Truetype, Printer, OLE, or Networking
- Full Windows 3.1 API set but reduced
- Look in MODW_API.H file for complete details
- unsupported APIs return failed error codes

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API Structure : Windows 3.1

- Win3.1 invoked automatically from CD-ROM
  - specify minwin.com + command line parameters to start
- Special video modes available
  - specify in system.ini or optional win.ini

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New User Interface Controls (TVUI.DLL)

- Software keyboard
- 3-D Buttons (push, sticky, radio, check and group)
- Scroll bars and Sliders (changeable thumb)
- List boxes (simple and popup)
- Static boxes (for text or graphics)

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Video Modes

- Use Windows GDI services for most UI
- TVVGA256 (ROM) - 640x400x8 high-res or
- MCGA256 (ROM) - 320x200x8 low-res
- Dynamic driver loading in system.ini:
  - in [tvvga.drv] section of system.ini
  - specify either Resolution=320x200 or Resolution=640x400 (default)

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Video Modes

- Access all video modes through single API from Windows
  - use DISPDIB api to display images
  - video support for 8 bit clut, rgb555, rgb565, yuv8 and yuv16
- Direct video access to hardware
  - use EnterDVA and ExitDVA api to get/release video control
  - no Windows GDI support when in DVA mode

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Input device (HC.DLL)

- Support for Tandy VIS IR controller -or- Gravis joystick on development machine
- Virtual key input - looks like normal Windows keyboard
- Random Roam or Tab Based Mouse Motion - looks like real mouse movement
- Focus Manager - specify TAB order matrix for controls
  - use hcControl to switch between the two

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Memory Card for VIS (MC.DLL)

- Save-It™ Cartridge support
  - mcAlloc, mfRead, mcWrite, and mcRegister APIs
- Identical APIs for MS-DOS users in LIB form (mcd.lib)
- SDK to include:
  - Memory Card Management Utility (MCMan)
  - Memory Card Loader Utility (MCLoader)

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Digital Video Playback - AVI

- RLE decompressor included in VIS ROM
- Other decompressors loaded from CD
- Author time considerations
  - Author settings for 150KB and CD based playback in VidEdit Tool
- Display sizes
  - Any video mode supported by DisplayDIB full screen, or windowed sizes

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Sample Code

- Auto-bootable CD launches directly to WinShell
  - useful for testing; example app start sequence
- WinShell, Reversi, and SlideShow
- Generic Application and Toolbar samples
- Mixer and SetVolume levels for VIS
- More...

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SDK Utilities and Tools

- CLTCONV
  - to convert BMPs to VIS system palette
- CONVER24
  - to convert 24-bit images to Modular Windows RIFF file format
- DOSMON
- HeapWalk and MWDEB286 debugger

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Modular Windows™ Application Startup

- Default SYSTEM.INI settings in ROM
  - can be overidden by application
- CD-ROM drive is the A: device
- paths, command line parameters to start:
  - minwin a:\windows_directory
  - don't specify paths ending with \

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SYSTEM.INI and WIN.INI Settings

- To start application
  - in [boot] section of SYSTEM.INI have shell=yourapp.exe
- Use WIN.INI for:
  - AVI settings
  - load fonts
  - driver and application specific settings

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Digital Video Playback - AVI

- Specify in SYSTEM.INI
  - in [drivers] section
  - specify new decompressor driver with avivideo=newavi.drv
- Specify in WIN.INI
  - in [MCIAVI] section
  - specify DefaultVideo=Window (for windowed or Full for full screen)
  - ZoomBy2=0, StupidMode=1
  - SkipFrames=1, AccurateSeek=1

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CD-ROM Optimization

- SYSTEM.INI and WIN.INI files are cached
- keep files closely together and inorder of loading (use MWDEB286 to determine)
- if <100 files, put all in a single ROOT directory
- if >100 files, place files into logical subgroups
- Microsoft CD-ROM Technical Notes

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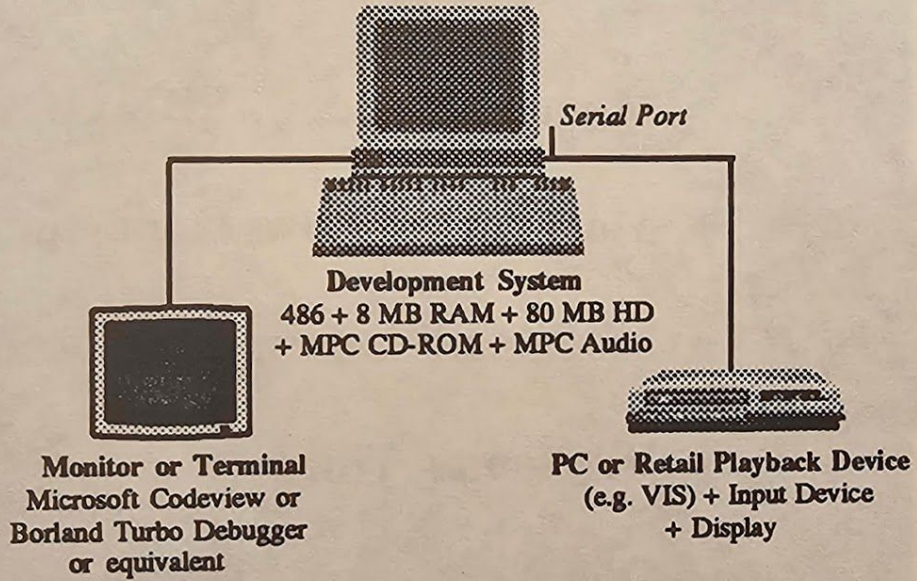
Development System + VIS



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Debugging Environment

- Serial Port Redirector
- On development machine:
  - run tltsr and rfserver
  - run noecho if want to debug on target
- On target VIS:
  - install serial port with ROM option
  - turn machine on and run application -or-
  - load MWDEB286 then start application
- Can run both redirector and debug terminal simultaneously
- Additional hardware required from Tandy

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Developer Advantage

- Modular Windows and Developers
  - Development on Windows-based PC
  - Developers use same hardware as with PC development
  - Common Content
  - Windows and MS-DOS development and authoring tools
  - Opportunity in a new class of platform

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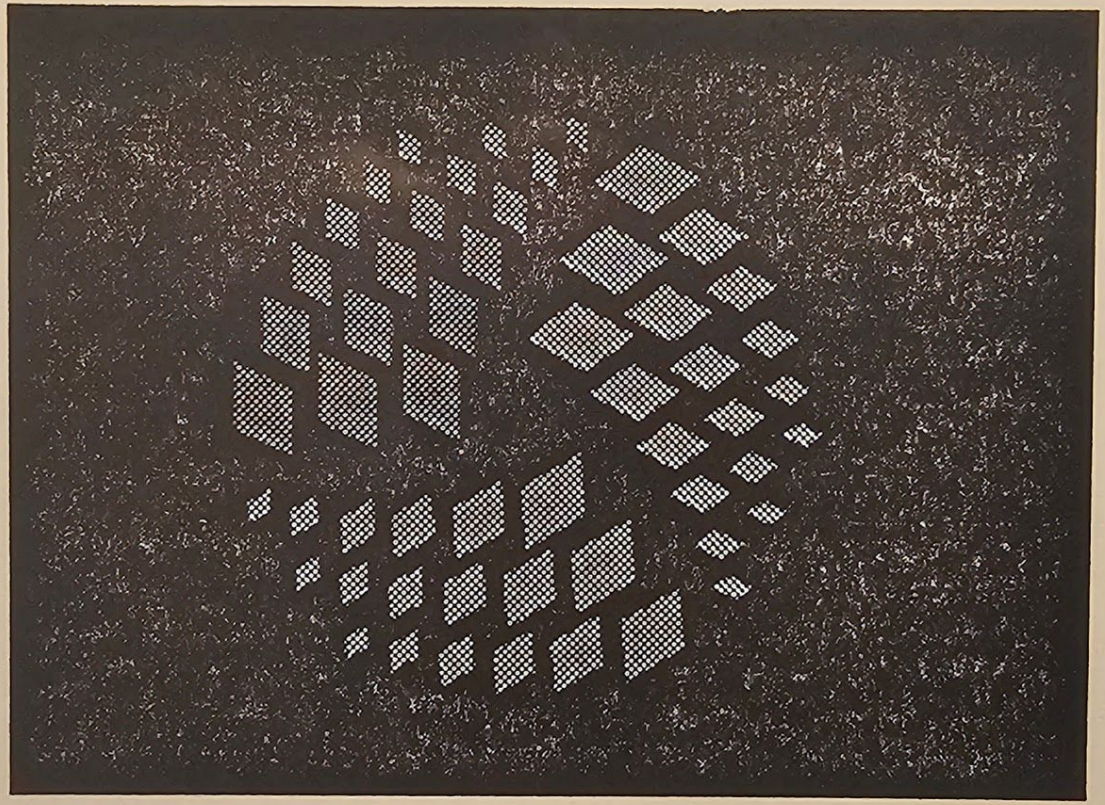

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